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Datasheet for the decision of 15 June 2021

Case Number: T 3001/18 - 3.3.01

Application Number: 12799127.1

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Language of the proceedings: EN

Title of invention:
ANTIMICROBIAL COMPOSITION

Patent Proprietor:
Unilever Global IP Limited
Unilever IP Holdings B.V.

Headword:
Antimicrobial composition comprising thymol/UNILEVER

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

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Beschwerdekammern

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Case Number: T 3001/18 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 15 June 2021

Appellant: (Patent Proprietor 1)	Unilever Global IP Limited Port Sunlight Wirral, CH62 AZD (GB)
Appellant: (Patent Proprietor 2)	Unilever IP Holdings B.V. Weena 455 3013 AL Rotterdam (NL)
Representative:	van den Brom, Coenraad Richard Unilever N.V. Unilever Patent Group Bronland 14 6708 WH Wageningen (NL)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 19 October 2018 revoking European patent No. 2787828 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	A. Lindner
Members:	M. Pregetter
	L. Bühler

Summary of Facts and Submissions

I. European patent No. 2 787 828 is based on European patent application No. 12799127.1, filed as an international application published as WO2013/083592.

II. The following documents, cited during the opposition and appeal proceedings, are referred to below:

(5) WO2010/046238

(6) Griffin et al., Flavour Fragr. J., 1999, 14, 322-332

(E1) Experimental Report, dated October 2017, 11 pages

III. European patent EP 2 787 828 was opposed under Article 100(a), (b) and (c) EPC on the grounds that the claimed subject-matter contained subject-matter for which no European patent should be granted, lacked novelty and inventive step, was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, and extended beyond the content of the application as filed.

IV. In the course of the opposition proceedings, the patent proprietors requested the rejection of the opposition and submitted auxiliary requests 1 to 5.

The opposition division revoked the patent. The subject-matter of the main request (set of claims as granted) and of auxiliary requests 1 to 3 was found to include a method for treatment as per Article 53(c) EPC. The subject-matter of auxiliary request 4 was found not to be novel and the subject-matter of

auxiliary request 5 was found not to meet the requirements of Articles 56 and 83 EPC.

The patent proprietors appealed against this decision.

Together with the letter setting out the grounds of appeal the appellants submitted auxiliary requests 1 to 6.

V. Claim 1 of the main request and of auxiliary requests 1 to 5 reads as follows.

"1. An antimicrobial composition comprising:
i. 0.001 to 5% by weight of thymol,
ii. 0.001 to 5% by weight of one or more menthadiene alcohols, and
iii. a carrier;
wherein the one or more menthadiene alcohols are selected from the group consisting of 2-methyl-5-(prop-1-en-2-yl)cyclohex-2-enols, and (4-(prop-1-en-2-yl)cyclohex-1-en-1-yl)methanols; and wherein the carrier comprises water, ethanol, propanol, isopropanol, ethylene glycol, propylene glycol, diethylene glycol, or a mixture thereof."

Claim 1 of auxiliary request 6 differs in that the composition has been restricted by the term "for use in therapeutic disinfection of a surface".

VI. The opponent withdrew its opposition with the letter dated 3 May 2019.

VII. Oral proceedings before the board were held on 15 June 2021.

VIII. The appellants' (patent proprietors') arguments, in so far as they are relevant to the present decision, are as follows.

Document (5) represented the closest prior art. It had a closely related purpose and similar teaching directed at obtaining rapid and synergistic antimicrobial efficacy. The synergistic combination included thymol. The difference between the compositions of document (5) and the composition in claim 1 under consideration was that in claim 1 selected menthadiene alcohols were applied instead of terpineol. The effect of this difference was a similar synergistic and rapid (15 seconds) antimicrobial efficacy. The synergistic effect was demonstrated in the examples of the patent in suit.

The technical problem was to provide an alternative composition while retaining the same rapid, synergistic effect.

None of the documents on file taught or suggested that the menthadiene alcohols in claim 1 would, when combined with thymol, yield a composition capable of providing rapid synergistic antimicrobial efficacy. The data in the patent specification furthermore showed that synergistic enhancement would not be achieved by just any combination of antimicrobial active ingredients.

The tests demonstrating synergy could not demonstrate the existence of synergy at high concentrations. This, however, could not be taken to mean that synergy did not occur at those concentrations. It was plausible that synergy would be present at the higher end of the concentration range. The technical contribution of the synergistic combination was present as soon as it

killed a single micro-organism. Claim 1 thus defined reasonable protection in view of the contribution to the art. The skilled person could exploit the synergistic action in different situations and applications. In household applications especially, concentrates would be diluted for cleaning. Another such example were soap bars.

Therefore, the synergistic combination involved an inventive step over the whole scope claimed.

IX. The appellants (patent proprietors) requested that the decision under appeal be set aside and the patent be maintained unamended (main request). Alternatively, they requested that the patent be maintained on the basis of one of the first to sixth auxiliary requests filed with the statement of grounds of appeal.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request - Inventive step*

2.1 The patent in suit relates to an antimicrobial composition and to a method for disinfecting surfaces, including hard surfaces and surfaces of the human body such as the skin, involving the antimicrobial composition. It aims to provide a composition that, when applied, provides an antimicrobial action for a relatively short cleaning period, preferably about 30 seconds or less, more preferably 15 seconds or less. The compositions contain thymol. However, the presence of thymol is highly perceptible due to its olfactory properties, and it may be considered too intense by some users when applied at concentrations that are

efficacious in rapid disinfection. The patent in suit therefore aims to provide compositions and methods that preferably require lower concentrations of thymol and/or have a more acceptable sensory profile (paragraphs [0001], [0005], [0007] and [0018] to [0026]). To this end, a composition according to claim 1 as granted is provided.

2.2 The closest prior art is document (5).

Document (5) also relates to antimicrobial compositions for personal cleaning, oral care or hard-surface cleaning applications (page 1, lines 4 to 6). Furthermore, it envisages disinfection and therapeutic benefits in the context of surfaces of the human body and in oral hygiene (claim 11 and page 14, lines 5 to 14). Its aim is a relatively quick antimicrobial action and it mentions the same time frame as the patent in suit (page 2, lines 1 to 8). Document (5) teaches using a composition comprising 0.01 to 5% by weight thymol, 0.01 to 5% by weight terpineol and a carrier (claim 1). Preferred carriers are solvents, such as water, ethanol or propanol (page 13, lines 8 to 11 and claim 8). Thymol, at 0.2%, leads to a log reduction of viable *E. coli* from 7 to 3.1 within 15 seconds and thus displays fast-acting antimicrobial activity (Table 1).

The difference between the subject-matter of the independent claims is thus the addition of one or more menthadiene alcohols as defined in claim 1 as granted.

2.3 However, no effect can be linked to this difference over the whole scope of claim 1 as granted, which encompasses 0.001 to 5% by weight thymol.

When looking at the data presented in the patent

specification and in document (E1), two facts are crucial. Firstly, the minimum biocidal concentration (MBC) of thymol determined in a certain aqueous medium (comprising water as a carrier and thus within the scope of claim 1) is 0.05 %w/v; this can be taken to be approximately identical to % by weight as the further ingredient is DMSO, which has a density of approximately 1 (1.1 g/cm^3 according to the literature), similar to water (density 1 g/cm^3). Secondly, Tables 7, 8 and 12 and document (E1) show data demonstrating synergy between thymol in combination with carveol and thymol in combination with perillyl alcohol (carveol and perillyl alcohol being menthadiene alcohols falling within claim 1 as granted) in certain concentration ranges and ratios. The experimental setup makes it possible to provide evidence of synergy at concentrations below the MBC of the individual compounds under consideration.

At thymol concentrations higher than the MBC, a complete kill of the micro-organisms under consideration is to be expected. At concentrations higher than the MBC, therefore, adding further antimicrobials, be it in the form of an antimicrobial carrier such as ethanol or a further, potentially synergistic, antimicrobial active ingredient, is irrelevant for achieving the antimicrobial effect (in the given time). Consequently, no synergistic interactions with further antimicrobial active ingredients can be taken into account when looking at concentrations of thymol above its MBC. In the case in hand, the scope of claim 1 as granted encompasses concentrations of thymol above its MBC. At these concentrations, adding the claimed menthadiene alcohols does not lead to any additional antimicrobial effect.

The technical problem is thus to provide a further fast-acting antimicrobial composition.

2.4 When trying to provide a further fast-acting antimicrobial composition, the person skilled in the art would have added any ingredient customary in the field of antimicrobials.

Examples of these ingredients are further compounds known to have antimicrobial activity. As already indicated in the decision under appeal, these compounds include carveol and perillyl alcohol (see decision under appeal, page 32, last paragraph). The antimicrobial activities of carveol and perillyl alcohol are described in document (6), Table 2, which provides data on their minimum inhibitory concentrations against various micro-organisms, including *E. coli*.

The proposed addition of further antimicrobials would have fallen within the routine measures that the skilled person would have taken to solve the problem of providing a further fast-acting antimicrobial composition.

2.5 Hence, the solution proposed in claim 1 of the main request lacks inventive step within the meaning of Article 56 EPC.

2.6 *Further arguments*

2.6.1 The appellants argued that a broad scope was justified as compositions were often sold as concentrates in the field under consideration.

The board cannot accept this argument. The claim at

issue does not explicitly specify concentrates, nor are concentrates even mentioned in the patent specification. In the field under consideration, spray-on applications are frequent, especially when disinfecting surfaces, so there is no basis for considering an implicit limitation to concentrates.

2.6.2 The appellants stressed that the synergistic effect shown for certain concentrations and ratios would be present upon use, irrespective of whether the thymol concentrations were above the MBC (in the system). The synergistic effect thus provided a contribution to the art over the whole scope claimed.

When assessing inventive step, surprising technical effects that have been proven to be linked to the differences over the closest prior art have to be taken into account. In this case, there is no evidence on file that adding further antimicrobials with a potentially synergistic action to the compositions specified in document (5) would show a surprising technical effect over the whole thymol concentration range. At the higher ends of this range, a complete kill of the microbes under consideration is achieved in the time frame set by both document (5) and the patent in suit. The fact that the complete kill might be due in part to a mechanism involving synergy is irrelevant for the effect (of a complete kill).

3. Auxiliary requests 1 to 5

Auxiliary requests 1 to 5 contain the same claim 1 as the main request.

The arguments given for claim 1 of the main request under point 2 above thus also apply to these requests.

The subject-matter of claim 1 of auxiliary requests 1 to 5 does not involve an inventive step (Article 56 EPC).

4. Auxiliary request 6

The subject-matter of claim 1 of auxiliary request 6 differs from the subject-matter of claim 1 of the main request in that the composition has been restricted "for use in therapeutic disinfection of a surface".

However, the closest prior art in the form of document (5) already envisages its compositions being used for disinfecting surfaces, while also mentioning therapeutic applications (claim 11 and page 14, lines 5 to 14); see point 2.2.

Consequently, introducing this feature does not result in any additional difference with regard to the closest prior art.

The technical problem is to provide a further fast-acting antimicrobial composition for use in the therapeutic disinfection of a surface.

The subject-matter of claim 1 of auxiliary request 6 is obvious for the same reasons as given above (see point 2.4) and does not involve an inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Schalow A. Lindner

Decision electronically authenticated